

Two New Genera of North American Incurvariine Moths

(Lepidoptera: Incurvariidae)

Donald R. Davis

Dept. Entomology, Smithsonian Institution, Washington, D.C. 20560

Over the past several years I have devoted some effort to a systematic revision of the American moths of the family Incurvariidae, involving the subfamilies Incurvariinae, Prodoxinae, and Adelinae. During the course of these investigations, several new generic and specific taxa have been discovered. In order to validate two of these for inclusion in a forthcoming checklist of the *Moths of North America north of Mexico*, they are described now. The availability of these two generic names will make it possible to list all previously described North American species in a proposed phylogenetic sequence and with proper generic combinations.

As a means of clarifying the following generic descriptions, I have included illustrations of critical anatomical features of the type species of each new genus.

I wish to acknowledge Ms. Biruta Akerbergs, Mr. Andre Pizzini (deceased), and Mr. George Venable, staff artists of the Department of Entomology, for the illustrations used in this paper, and Mr. Victor Kranz of the Smithsonian Photographic Laboratory for his photographic assistance.

Tanysaccus, new genus

(Figures 1,3,5-6,9-12,17-18, and 20.)

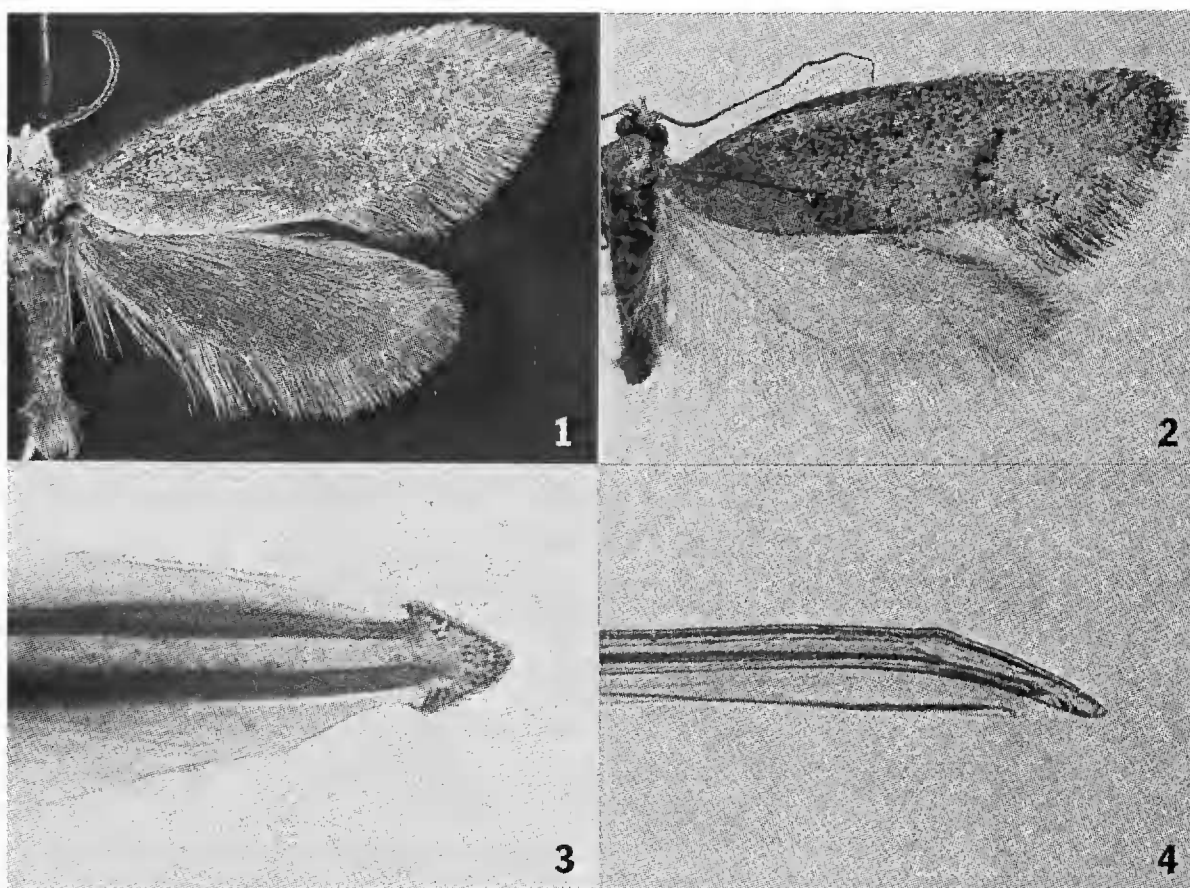
Type Species. — *Incurvaria aenescens* Wlsm., 1888.

Adult. — Small, slender-bodied moths with moderately slender wings; wing expanse 12-17 mm.

Head (Figures 5-6): Vestiture completely rough. Antennae 27-28 segmented, simple, approximately 0.45-0.55 the length of forewing; basal fourth to one-third of flagellum usually scaled dorsally; remainder of flagellum densely pubescent. Ocelli absent. Compound eyes relatively small, eye index¹ approximately 0.88-0.93; microtrichiae usually absent, sometimes present, scattered, variable in number; rarely exceeding diameter of a single facet in length. Mandibles present, but vestigial. Maxillary palpi elongate, slightly exceeding length of labial palpi, usually four-segmented, rarely with a minute, fifth segment at apex; terminal (fourth) segment longest, exceeding length of basal three segments combined. Galeae relatively short, slightly less than length of maxillary palpi. Labial palpi three-segmented, with second segment the longest and nearly twice the length of apical segment.

Thorax: Foretibiae with pectinate epiphysis at middle and extending about 0.6 the distance to apex. Forewings relatively narrow, greatest width approximately 0.32-0.34 the

¹ See Powell, 1973:8



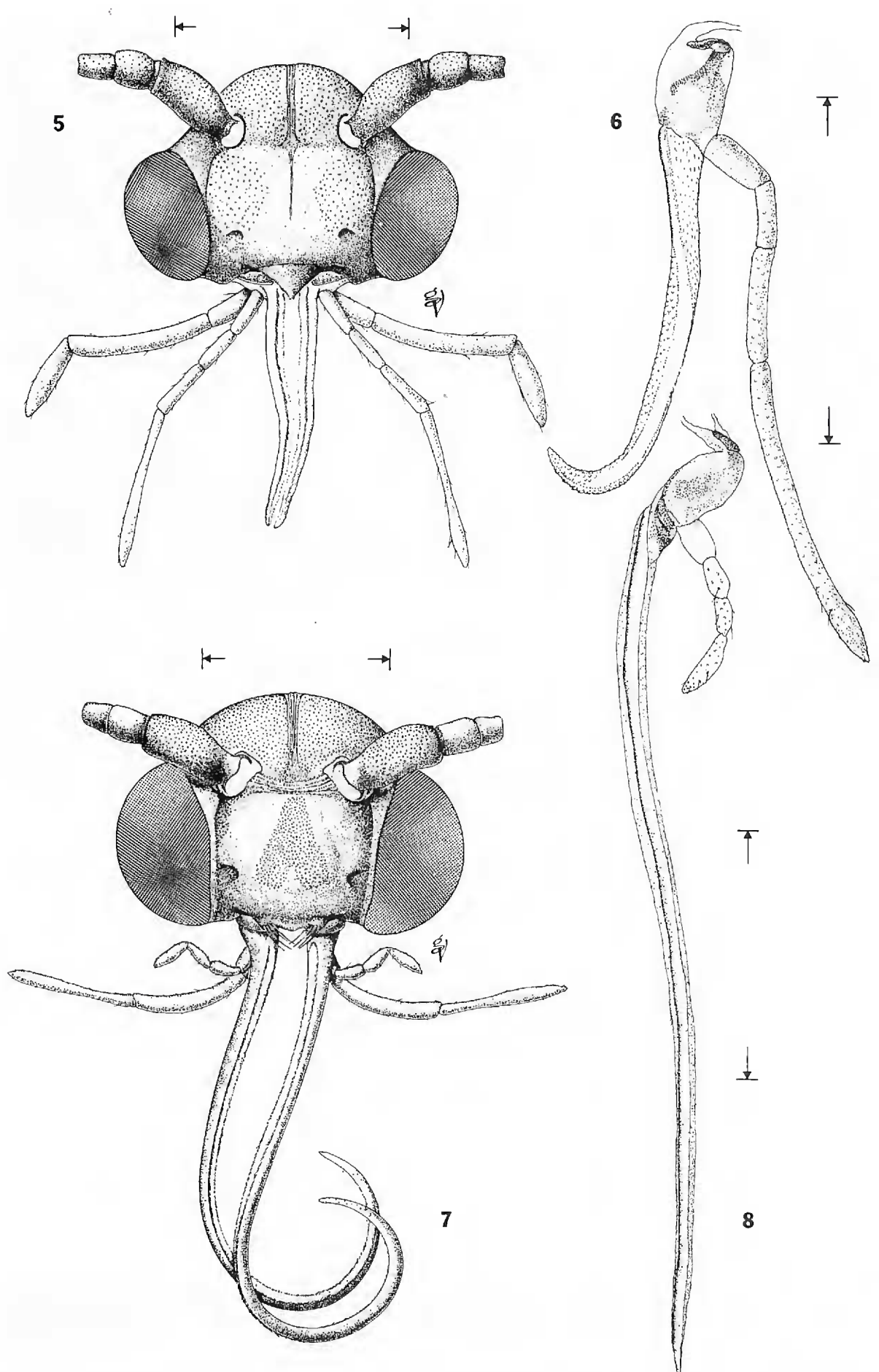
Figs. 1-4 Adult structure: Fig. 1, *Tanysaccus aenescens* (Wlsm.), male, Pullman, Wn., wing expanse 15 mm; Fig. 2, *Tridentaforma fuscoleuca* (Braun), male, Olympic Mts., Wn., wing expanse 15 mm.; Fig. 3, *Tanysaccus aenescens*, apex of female ovipositor; Fig. 4, *Tridentaforma fuscoleuca*, apex of female ovipositor.

length, with 10 veins from discal cell, occasionally with 9; R_4 and $_5$ variable, either separate, stalked, or completely fused; R_2 arising from apex of accessory cell approximate to R_3 ; Cu_{1a} arising considerably closer to M_3 than to Cu_{1b} . Hindwings approximately same width as forewings, with 6 veins arising separate from cell; Cu_{1b} arising from outer third of cell; base of medius forked within cell of both wings.

Abdomen: Unmodified, without specialized setal tufts or appendages. Seventh sternite of female moderately long, usually averaging 2.8-4.2 length of sixth. Eighth segment lightly and uniformly pigmented, without darkly sclerotized areas laterally.

Male genitalia (Figures 9-12): Uncus indistinct, reduced to a pair of small lobes. Vinculum and saccus Y-shaped, greatly lengthened, gradually constricting to a narrow, blunt end anteriorly; length approximately 2-3X as long as valvae. Valvae sharply constricted at middle, forming two portions; basal half broad, padlike; distal half slender with a prominent lobe bearing a single apical pecten of 6-20 spines. Juxta sharply divided into two distinct regions, a relatively broad, elongate caudal half and an extremely slender, rodlike anterior half. Aedeagus extremely long and slender, usually equalling length of entire genitalia, with a single, elongate, subapical cornutus.

Female genitalia (Figures 3, 17-18): Apex of ovipositor compressed, triangular (viewed laterally) with dorsal and ventral cutting edges serrulate and usually asymmetrical (i.e., of unequal lengths). Vestibulum typically very slender, without heavily thickened walls but usually with darkly pigmented areas posteriorly. Ductus bursae usually not thickened, extremely elongate, often more than 1.5 the length of posterior apophyses. A pair of stellate signa present; rays variable, usually slender but short and broad in *T. aenescens*, ranging in number between 4 and 15.



Figs. 5-8 Adult head structure: Figs. 5-6, *Tanysaccus aenescens*; Figs. 7-8, *Tridentaforma fuscoleuca*. (Scale = 0.5 mm.)

Most of the species now grouped under *Tanysaccus* were formerly placed in either *Lampronia* Steph. or *Greya* Bsk. by McDunnough (1939) and others. Three previously described species, *Tanysaccus aenescens* (Wlsm.), *T. humilis* (Wlsm.), and *T. sublustris* (Braun), are now recognized as comprising this genus along with one northeastern species yet to be named. This group is characterized by its elongate, typically four-segmented maxillary palpus, relatively short galea, and the unusual form of the male genitalia. The latter is interesting in that it closely resembles that of the prodoxine genus *Agavenema* Davis (1967), particularly in the elongate saccus and the structure of the valvae. The valvae in both *Tanysaccus* and *Agavenema* possess a median lobe bearing a single, crescent-shaped pecten consisting of several stout spines. *Tanysaccus* differs from *Agavenema* in nearly all other respects, especially in their different head and thoracic structure. For example, the eyes of *Agavenema* are greatly enlarged (eye index approximately 1.25), the maxillary palpi are five-segmented, and the furcasternum of the metathorax has the furcal apophyses extended and fused to the secondary arms of the furcasternum. In *Tanysaccus* the metafurcal apophyses are considerably shorter and free. Another feature of *Tanysaccus* which serves to distinguish it from both *Agavenema* and *Greya*, to which it is perhaps more closely allied, is the triangular form of the apex of the ovipositor (as viewed laterally). *Tanysaccus* also possesses one of the longest ductus bursae in the family. Nothing is known of the biology or immature stages of this genus, other than that the adults are believed to be diurnal.

The elongate saccus in the males of this genus has suggested the specific name which is derived from the Greek, *tany* (long) and *sakkos* (bag); it is considered masculine in gender.

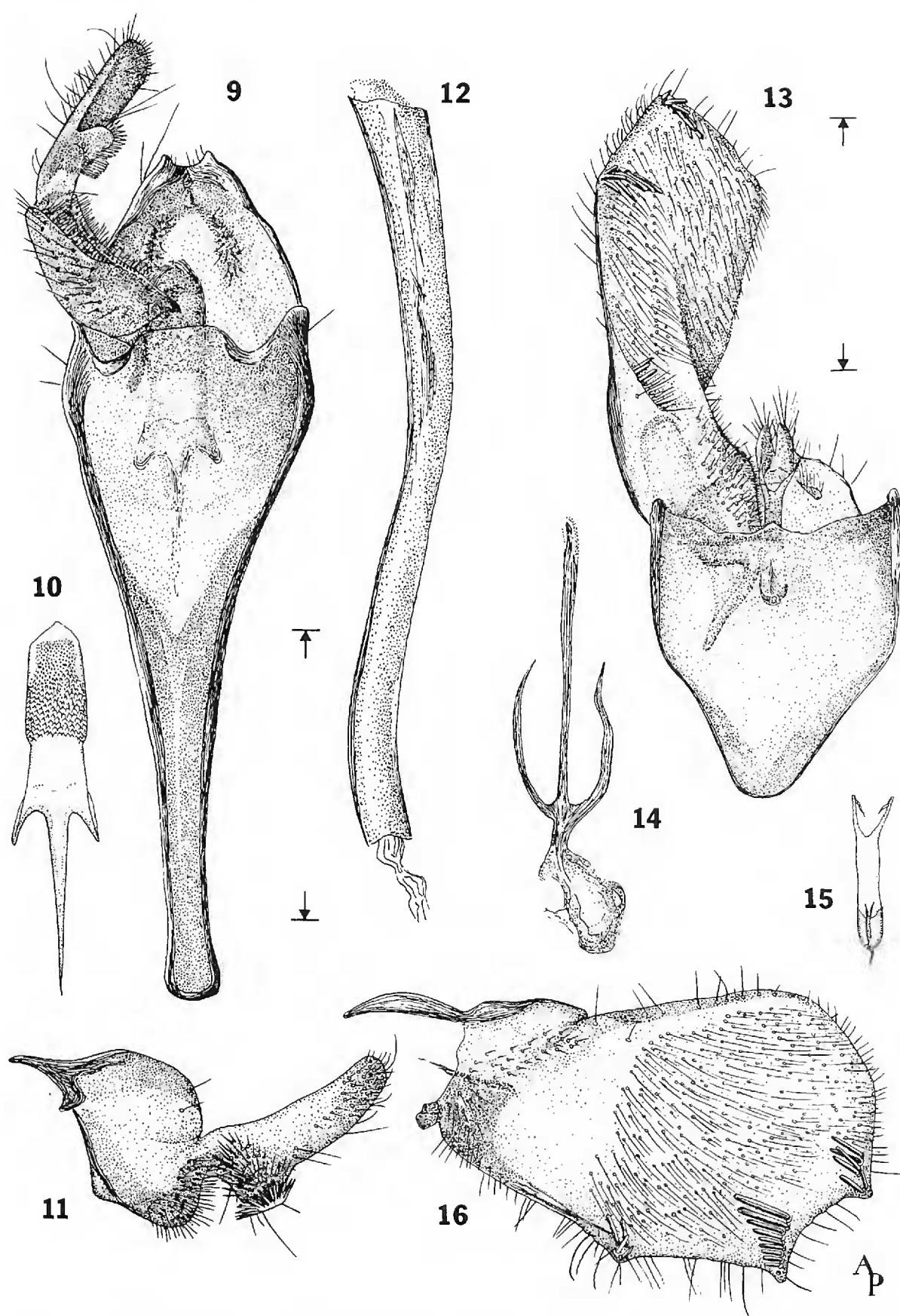
Tridentaforma, new genus (Figures 2,4,7-8,13-16,19, and 21.)

Type species.—*Lampronia fuscoleuca* Braun, 1923

Adult.—Small, slender-bodied moths with moderately slender wings; wing expanse 8.5-20.5 mm.

Head (Figures 7-8): Vestiture rough. Antennae 40-49 segmented, simple, approximately 0.50-0.55 the length of forewing; basal 0.6 to 0.7 of flagellum scaled dorsally; remainder of flagellum densely pubescent. Ocelli absent. Compound eyes moderately large, eye index approximately 1.0-1.1; microtrichiae few, widely scattered over eye. Mandibles vestigial. Maxillary palpi moderately long, approximately 0.5-0.6 the length of labial palpi, four-segmented, all segments relatively short; apical (fourth) segment slightly longer (approximately 1.5X the length of third). Galeae elongate, over 4X the length of maxillary palpi and about 2X the length of labial palpi. Labial palpi three-segmented, with apical segment elongate and equalling length of second.

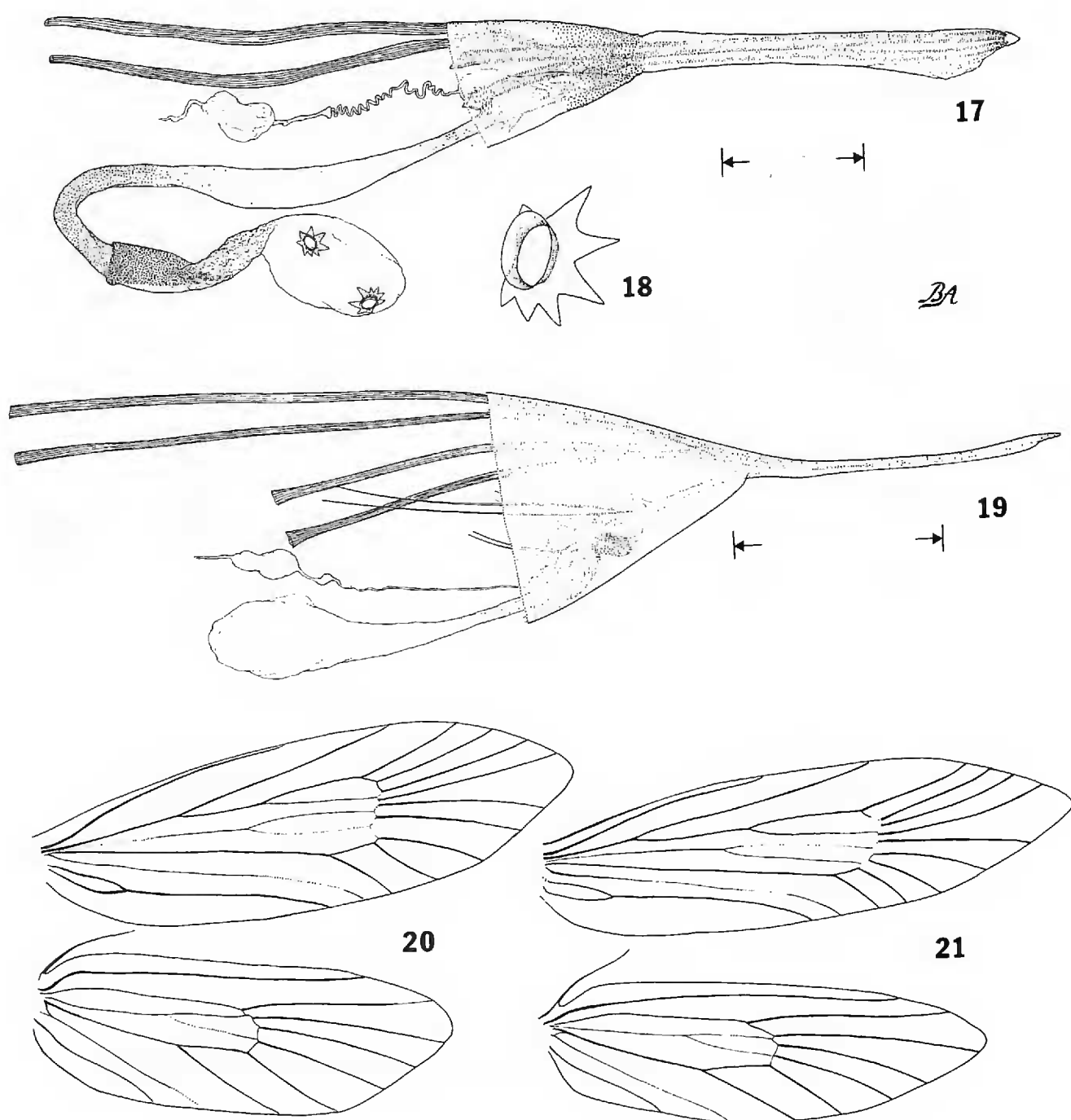
Thorax: Foretibiae with pectinate epiphysis from middle, extending approximately half way to apex. Forewings relatively narrow, greatest width about 3.4-3.6 length, with 10 veins arising usually separately from discal cell; R_1 arising near basal third of cell; R_2 from apex of accessory cell; R_3 rarely stalked with R_2 ; Cu_{1+2} about equidistant from M_3 .



Figs. 9-16 Male genitalia: Figs. 9-12, *Tanysaccus aenescens*; Figs. 13-16, *Tridentaforma fuscoleuca*. (Scale = 0.5 mm.)

and Cu_{1b} . Hindwings approximately same width as forewings, with 6 veins from cell; M_1 and M_2 sometimes connate; Cu_{1b} arising from outer third of cell; base of medius forked within cell of both wings.

Abdomen: Unmodified, without specialized setal tufts or appendages. Seventh sternite of female 2.4-2.8 the length of sixth. Eighth segment lightly and uniformly pigmented,



Figs. 17-21 Adult structure: Figs. 17-18, *Tanysaccus aenescens*, female genitalia; Fig. 19, *Tridentaforma fuscoleuca*, female genitalia; Fig. 20, *Tanysaccus aenescens*, wing venation; Fig. 21, *Tridentaforma fuscoleuca*, wing venation. (Scale = 0.5 mm.)

without darkly sclerotized areas laterally.

Male genitalia (Figures 13-16): Uncus reduced, consisting of two small lobes. Vinculum and saccus well developed, V- to Y-shaped, saccus sometimes attenuated; total length 0.6-1.3 the length of valvae. Valvae varying in width from relatively narrow to extremely broad; an equally spaced series of three pectens situated along ventral margin of valva, each pecten consisting of a short transverse row of 5-10 stout spines. Juxta moderately weak, and slender, gradually tapering anteriorly to an extremely slender, acute apex. Aedeagus three-branched with slender median branch the longest (approximately 2X the length of lateral branches) and containing the vesica; cornuti absent.

Female genitalia (Figures 4,19): Apex of ovipositor very slender, slightly compressed, acute, smooth, without a serrated cutting edge. Anterior and posterior apophyses extremely slender and elongate. Vestibulum relatively small and without heavily thickened

walls but with some sclerotization evident ventrally near posterior end. Ductus bursae membranous, relatively short, less than one-third the length of posterior apophyses. Corpus bursae entirely membranous, without signa.

Tridentiforma has been proposed for *fuscoleuca* Braun. Although only one species is included, considerable variation has been noted in the western populations and it is possible that a second, sibling species exists.

This genus may be distinguished from its nearest relatives, *Greya* and *Tanyssaccus*, by the following combination of characters: the elongate galeae; the relatively short, typically four-segmented maxillary palpi; the trident-shaped aedeagus and tripectinated valvae of the male, and the elongate, slender ovipositor of the female.

The unusual form of the aedeagus, believed to be unique in the Incurvariidae, has suggested the name for this genus, which is derived from the Latin *tridens* (trident) and *forma* (form). The generic name is considered feminine in gender.

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SCIENTIFIC NOTE

Some Notes on the Egg Sacs of *Aphonopelma chalcodes* (Araneae: Theraphosidae) — Two adult female tarantulas of the species *Aphonopelma chalcodes* Chamberlin produced egg sacs while kept in the laboratory. Both females were taken at Molino Basin, Pima County, Arizona. The first female made her egg sac on April 12, 1975, 241 days after she was captured. It was opened and contained 555 eggs. The second female formed her egg sac on March 1, 1976, 206 days after capture. This egg sac was kept at 23°-27°C in hopes that young would emerge. By 39 days mold became evident. The egg sac was then opened and found to contain 454 eggs. Many of these eggs had advanced to the deutova stage. Baerg (1958, The tarantula. University of Kansas Press, Lawrence, Kan. 88 pp.) found that the tarantula *Dugesiella hentzi* (Girard) produced 500-1000 eggs per egg sac and required 56 days in the laboratory before its young emerged from the egg sac. — EDWIN W. MINCH, Department of Zoology, Arizona State University, Tempe, Arizona 85281.